

## ABSTRACT OF THE DISCLOSURE

The voltage-controlled oscillator (VCO) in a frequency synthesizer using a phase-locked loop (PLL) is calibrated digitally during power up or channel switching. The VCO has a coarse frequency control and a fine frequency control. The coarse control consists of digital bits that are used for calibration. The fine control is connected to the charge pump output as in a regular PLL. By searching for the optimal control setting, the center frequency of the VCO is trimmed close to the desired frequency for the PLL to lock. This allows small VCO gain without losing the tolerance of process and temperature variations. As a result, the PLL phase noise performance is improved.

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